CHAPTER 2
DESCRIPTION OF ALTERNATIVES

This chapter describes the three alternatives that DOE has analyzed in this Waste Management EIS: the No Action Alternative (Continuation of Ongoing Waste Management Activities), Alternative A (Offsite Shipment of HLW, LLW, Mixed LLW, and TRU Waste to Disposal and Ongoing Management of the Waste Storage Tanks), and Alternative B (Offsite Shipment of LLW and Mixed LLW to Disposal, Shipment of HLW and TRU Waste to Interim Storage, and Interim Stabilization of Waste Storage Tanks). Descriptions of the facilities that would be affected and waste management activities that would be undertaken under each alternative are provided. This chapter ends with discussions of alternatives considered but not analyzed and a summary of the potential impacts under each alternative.

2.1 OVERVIEW OF ALTERNATIVES

This EIS addresses the waste management activities that DOE needs to conduct to meet its responsibilities under the West Valley Demonstration Project Act, as discussed in Section 1.1.2. Proposed waste management activities include the onsite management actions of continued temporary storage of waste and interim stabilization of the HLW tanks, and the shipment of wastes for offsite storage or disposal. Three alternatives have been defined for evaluation within this EIS; these alternatives represent the full range of waste management actions available to DOE and have been identified as:

- No Action Alternative – Continuation of Ongoing Waste Management Activities;

- Alternative A (DOE's Preferred Alternative) – Offsite Shipment of HLW, LLW, Mixed LLW, and TRU Waste to Disposal and Ongoing Management of the Waste Storage Tanks; and

- Alternative B – Offsite Shipment of LLW and Mixed LLW to Disposal, Shipment of HLW and TRU to Interim Storage, and Interim Stabilization of the Waste Storage Tanks.

The estimated timeframe for the actions assessed under these alternatives is a period of 10 years. Within that period, with the exception of the shipment of HLW directly from WVDP to a geologic repository (assumed for the purposes of analysis to be the proposed Yucca Mountain Repository near Las Vegas, Nevada), it is anticipated that available funding would allow the complete removal of all existing and any newly generated LLW and TRU wastes. HLW, whether shipped to Yucca Mountain directly from West Valley under Alternative A or from interim offsite storage under Alternative B, is not currently scheduled to be received by the repository until after 2025. The actions proposed under each alternative are summarized in Table 2-1.

Under the **No Action Alternative**, no new waste management activities would be performed beyond those activities that have been evaluated under NEPA in accordance with the provisions of the Council on Environmental Quality implementing regulations for NEPA (40 CFR Parts 1500-1508). DOE would provide continued operational support and monitoring of the facilities to meet the requirements for safety and hazard management. Waste management activities currently in progress would continue for onsite storage of existing Class A, B, and C LLW, mixed LLW, TRU waste and HLW wastes and offsite disposal of a limited quantity of Class A LLW at a facility such as Envirocare (a commercial radioactive waste disposal site in Clive, Utah), DOE's NTS in Mercury, Nevada, or the Hanford site in Richland, Washington. Under the No Action Alternative, active hazard management, operational support,

Table 2-1. Alternatives Matrix

Proposed Action	Alternative		
	No Action	**Alt A – Preferred**	**Alt B**
LLW			
Ship LLW to Envirocare, Hanford, or NTS	X(a)	X	X
TRU Waste			
Continue onsite storage	X		
Ship for disposal to WIPP		X	
Ship to Hanford, INEEL, ORNL, SRS, or WIPP for interim storage, then to WIPP for disposal			X
HLW			
Continue storing HLW onsite in Process Building	X		
Ship to Yucca Mtn directly		X	
Ship to SRS or Hanford for interim storage, then ship to Yucca Mtn			X
HLW Tank Management			
Ongoing management	X	X	
Retrievable grout added to dry tank and dry annulus			X

a. Limited to 145,000 cubic feet (4,100 cubic meters) of Class A LLW.

surveillance, and oversight would continue at the current levels of activity. Upon completion of ongoing efforts to remove wastes to the extent that is technically and economically practical, the waste storage tanks and their surrounding vaults would be ventilated to manage moisture levels as a corrosion prevention measure. Waste transportation destinations proposed under the No Action Alternative are shown in Figure 2-1.

Alternative A (DOE's Preferred Alternative) would emphasize waste management actions focused on (1) the removal of currently stored wastes (existing waste) on the site and waste to be generated over the next 10 years and (2) shipment to offsite locations for disposal. Upon completion of waste removal, DOE would continue active operational support, surveillance, and oversight to safely manage remaining systems and hazards. All LLW types (the remaining Class A LLW and all Class B and C LLW) and mixed LLW would be prepared for disposal and shipped off the site. Under Alternative A, DOE would ship Class A, B and C LLW and mixed LLW to one of two DOE potential disposal sites (in Washington or Nevada) or to a commercial disposal site such as the Envirocare facility in Utah, ship TRU waste to WIPP in New Mexico, and ship HLW to the proposed Yucca Mountain HLW Repository. LLW and mixed LLW would be shipped over the next 10 years. TRU waste shipments to WIPP could occur within the next 10 years if the TRU waste is determined to meet all the requirements for disposal in this repository; however, if some or all of WVDP's TRU waste does not meet these requirements, the Department would need to explore other alternatives for disposal of this waste. Waste transportation destinations proposed under Alternative A are shown in Figure 2-2.

Under **Alternative B**, offsite shipment and disposal of existing wastes and newly generated LLW (the remaining Class A LLW and all Class B and C LLW) and mixed LLW would be transported to the same locations assessed under Alternative A. TRU wastes would be shipped to interim storage at one of five DOE sites: Hanford, INEEL, ORNL, SRS, or WIPP, with subsequent shipments from Hanford, INEEL, ORNL, or SRS to WIPP for disposal. HLW would be shipped to SRS or Hanford for interim storage,

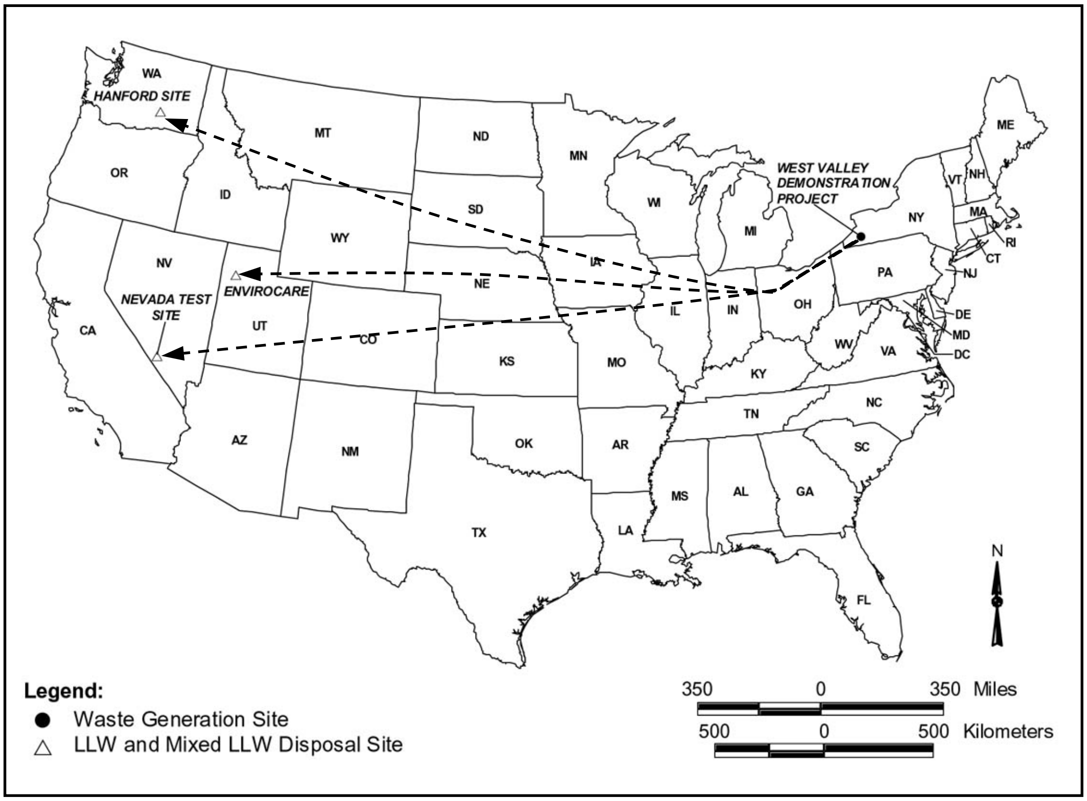

Figure 2-1. Waste Destinations Under the No Action Alternative

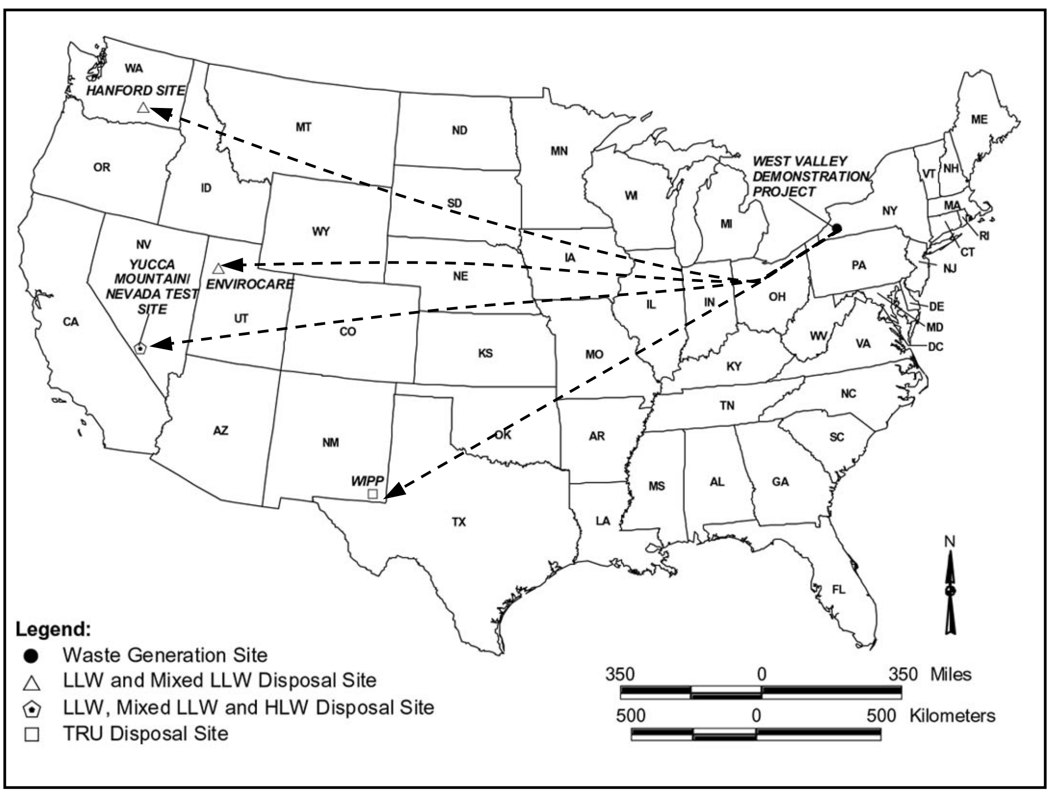

Figure 2-2. Waste Destinations Under Alternative A

with subsequent shipments to Yucca Mountain for disposal. The waste storage tanks and their surrounding vaults would be partially filled with a retrievable grout to provide for interim stabilization of the tanks. Waste transportation destinations proposed under Alternative B are shown in Figure 2-3.

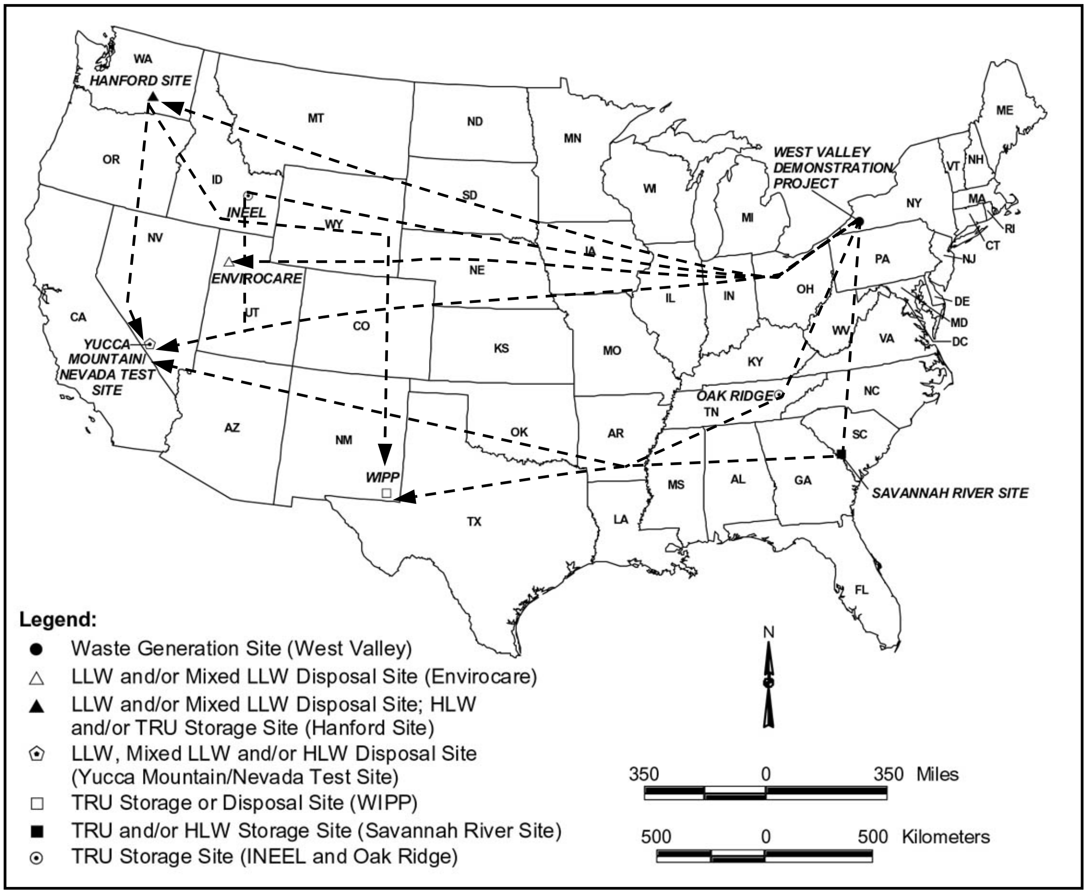

Figure 2-3. Waste Destinations Under Alternative B

2.2 ONSITE WASTE MANAGEMENT FACILITIES

Wastes subject to offsite shipping and disposal under the actions proposed in this EIS are stored in several WVDP buildings. An aerial view of the entire project premises is shown in Figure 2-4, and a schematic of the same view is shown in Figure 2-5. An overview of the site facilities is shown in Figure 1-2.

Vitrified HLW is stored in the Process Building (Figure 2-5). The vitrified HLW was the result of processing liquid wastes that were stored in tanks in the Tank Farm (Figure 2-6). LLW and TRU wastes are stored in the LSB; LSAs 1, 3, and 4; the Chemical Process Cell Waste Storage Area (Figure 2-7); and the Radwaste Treatment System Drum Cell (Figure 2-8). Volume reduction of oversized contaminated materials will occur in the Remote Handled Waste Facility (RHWF) that is currently under construction (Figure 2-7).

Figure 2-4. Aerial View of WVDP Site Facing Southeast

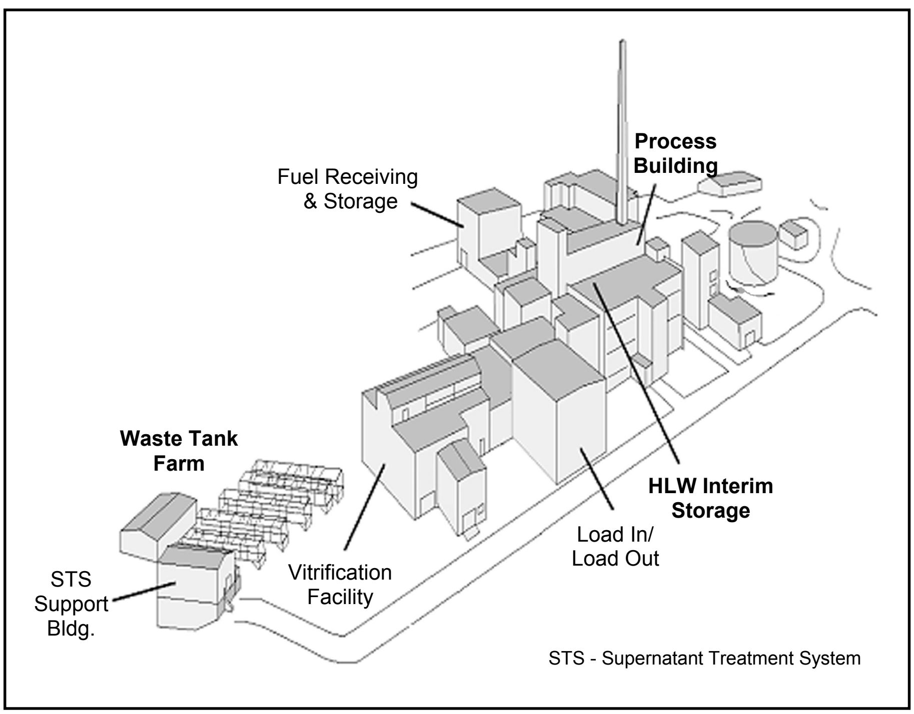

Figure 2-5. Schematic of WVDP Site Facing Southeast

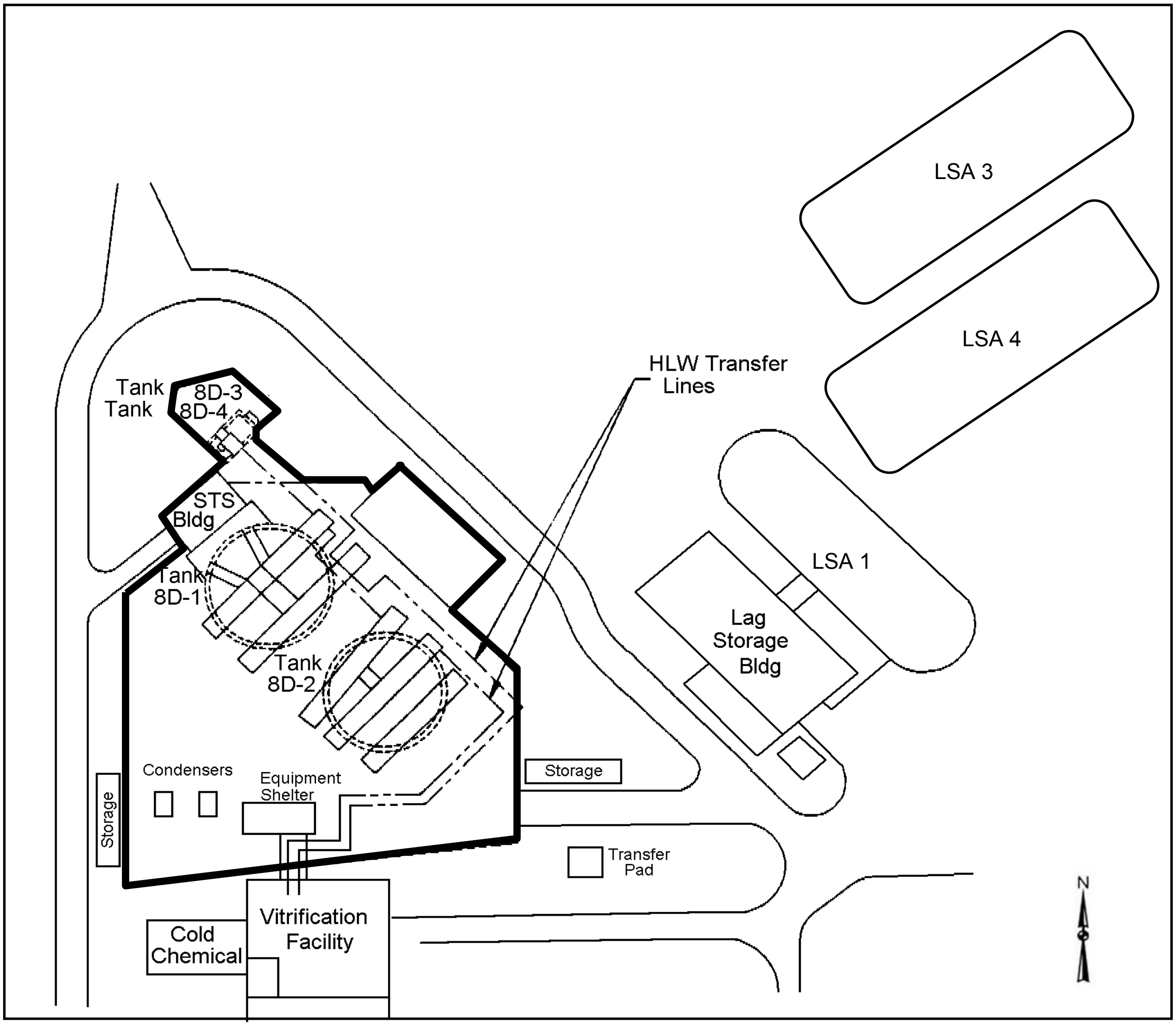

Figure 2-6. Tank Farm Area

2.2.1 Process Building

The Process Building is a multi-storied building that was used from 1966 to 1971 to recover uranium and plutonium from spent nuclear fuel (Figure 2-5). The Fuel Receiving and Storage Area is a metal building attached to the east side of the Process Building. Spent fuel shipments were received, transferred to, and stored in the fuel storage pool inside the Fuel Receiving and Storage Area prior to their transfer to the Process Building. Removal of spent fuel from the Fuel Receiving and Storage Area was completed in July 2001. The Process Building is made up of a series of cells, aisles, and rooms constructed of reinforced concrete and concrete block. The cells were used for mechanical and chemical processing of spent fuel and management of radioactive liquid waste. Operations in the cells were performed remotely by operators from various aisles formed by adjacent cell walls (Marschke 2001).

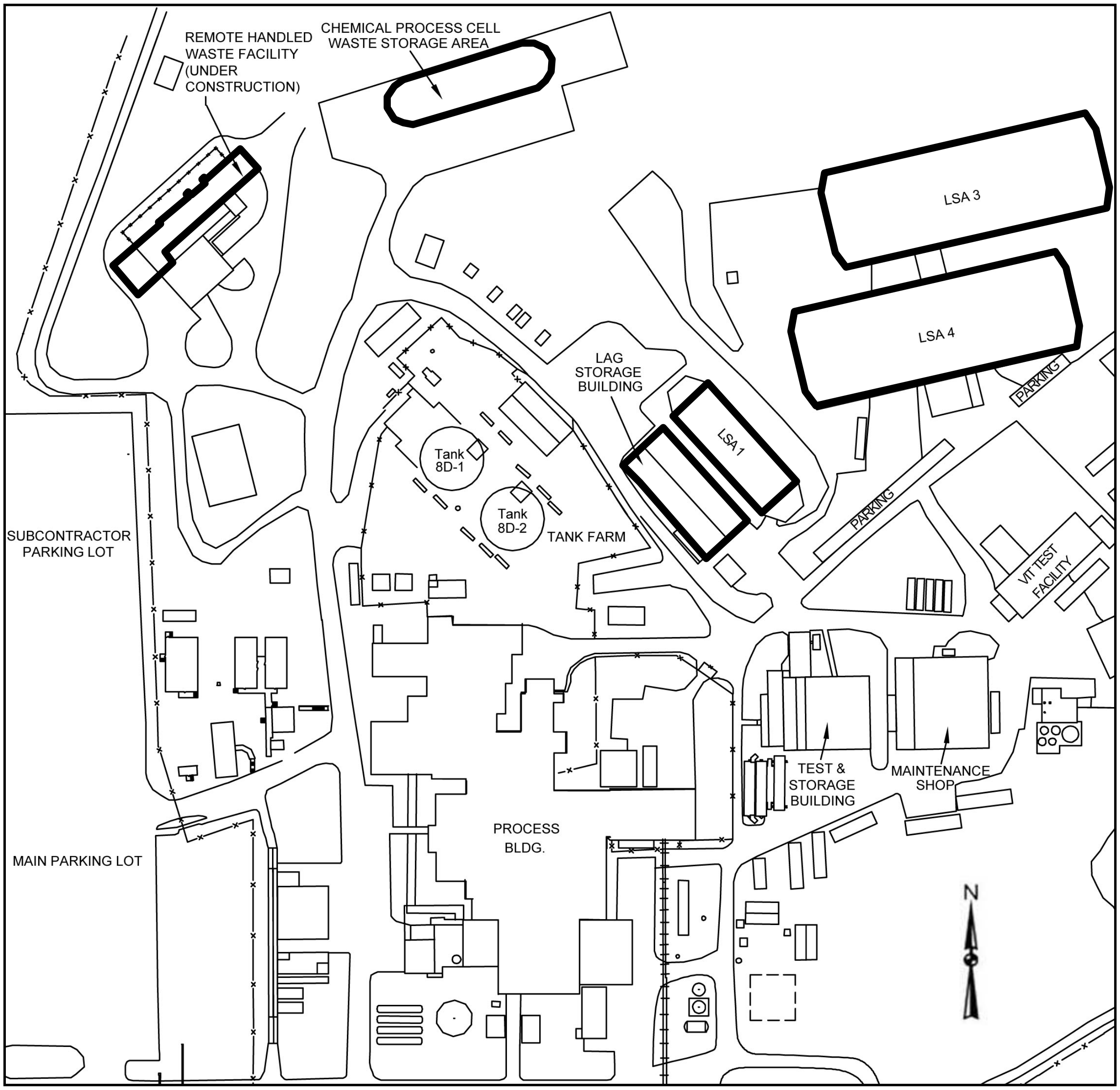

Figure 2-7. Lag Storage Building, Lag Storage Additions, Chemical Process Cell Waste Storage Area, and Remote Handled Waste Facility

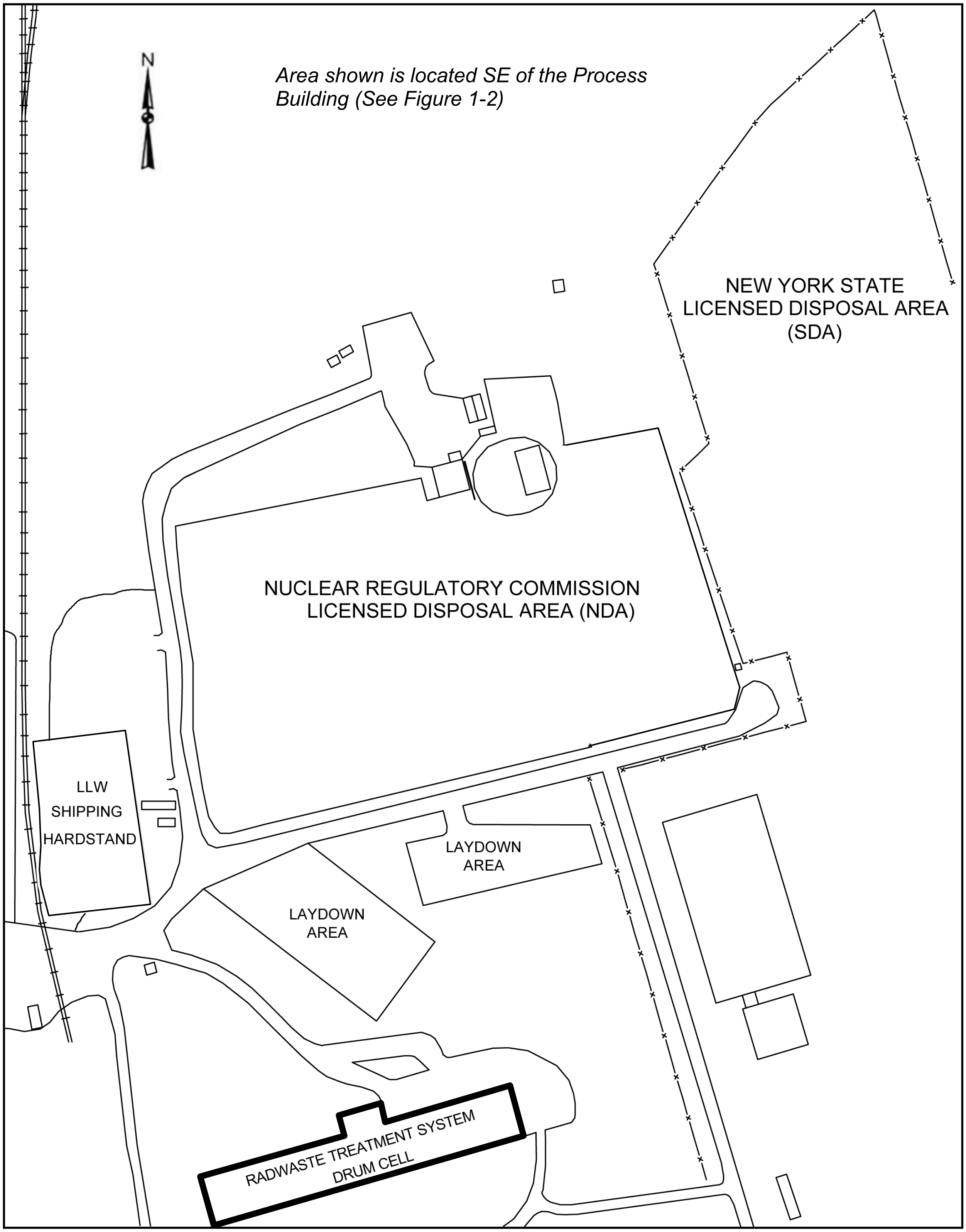

Figure 2-8. Radwaste Treatment System Drum Cell

From 1982 to 1987, the WVDP decontaminated cells and rooms to prepare them for reuse as interim storage space for HLW or as part of the Liquid Waste Treatment System. This involved such activities as removing vessels and piping from cells, removing contamination from walls, and fixing contamination in place. Among the areas decontaminated were the Chemical Process Cell, Extraction Cell 3, Extraction Chemical Room, and Product Purification Cell (Marschke 2001). The Chemical Process Cell is currently used for storage of 275 canisters of HLW in a borosilicate glass matrix produced in the Vitrification Plant.

2.2.2 Tank Farm

The Tank Farm (outlined in Figure 2-6) includes four waste storage tanks (8D-1, 8D-2, 8D-3, and 8D-4), a HLW Transfer Trench, and four support buildings. Built between 1963 and 1965, the waste storage tanks were originally designed to store liquid HLW generated during fuel reprocessing operations. The two larger tanks, 8D-1 and 8D-2, are reinforced carbon steel tanks. Each of these tanks has a storage capacity of about 2.8 million liters (750,000 gallons) and is housed within its own cylindrical concrete vault. Tank 8D-2 was used during reprocessing as the primary storage tank for HLW, with 8D-1 as its designated spare. Both were modified after the WVDP began to support HLW treatment and vitrification operations. The two smaller tanks, 8D-3 and 8D-4, are stainless steel tanks with a storage capacity of about 57,000 liters (15,000 gallons) each. A single concrete vault houses both of these tanks. Tank 8D-3, once designated as the spare for 8D-4, is currently used to store decontaminated process solutions before they are transferred to the Liquid Waste Treatment System for processing. Tank 8D-4, which was used to store liquid acidic waste generated during a single reprocessing campaign, is now used to collect liquids and slurries from the Vitrification Facility waste header. The HLW Transfer Trench is the 150-meter (500-foot)-long concrete vault containing double-walled stainless steel piping that conveys HLW between the Tank Farm and the Vitrification Facility. Upper sections of the pumps used to transfer the HLW through this trench are housed in stainless-steel-lined concrete pits above each tank vault (Marschke 2001).

Support buildings in the Tank Farm include the Supernatant Treatment System (STS) Support Building, Permanent Ventilation System Building, Con-Ed Building, and Equipment Shelter. The STS Support Building is a radiologically clean, two-story structure adjacent to Tank 8D-1. It houses equipment and auxiliary support systems used to operate the STS. A shielded valve aisle on the lower level of the STS contains remotely operated valves and instrumentation used to control system operations. The Permanent Ventilation System Building is a steel-framed and -sided structure near the north end of Tank 8D-2. It provided ventilation to the STS Support Building, pipeway; and more recently to the four waste storage tanks. Currently, however, it is offline and there is no plan to restart it. The Con-Ed Building is a concrete block building on top of the 8D-3/8D-4 vault. It houses instrumentation and valves used to monitor and control operation of these tanks. The Equipment Shelter is a one-story concrete block building immediately north of the Vitrification Facility. It houses the Tank Farm ventilation system that was used in the past to ventilate all four waste storage tanks (Marschke 2001).

2.2.3 Waste Storage Areas

The following sections describe the LSB, LSAs, and Chemical Process Cell Waste Storage Area. These are the areas in which LLW, mixed LLW, and TRU wastes are currently stored.

2.2.3.1 Lag Storage Building

The LSB is an interim status, mixed waste storage facility under RCRA. It is used to store containerized, contact-handled (CH) wastes (wastes with surface dose rates less than 100 millirem [mrem] per hour), including mixed waste, LLW, and suspect CH-TRU wastes (wastes suspected of containing transuranic radioisotopes) generated from WVDP operations (Marschke 2001).

The LSB is a pre-engineered, insulated, metal, Butler-style building located about 122 meters (400 feet) northeast of the Process Building (see Figure 2-7). Constructed in 1984, the LSB is supported by a clear span frame anchored to a 43-meter by 8-meter (140-foot by 60-foot) concrete slab. The listed waste storage operating capacity of the LSB under the RCRA permit (including a center aisle and operating space) is 1,331 cubic meters (47,011 cubic feet), and there are currently 202 cubic meters (7,134 cubic feet) of available storage space (Marschke 2001).

Measuring Radiation

The unit of radiation dose for an individual is the rem. A millirem (mrem) is 1/1,000 of a rem. The unit of dose for a population is person-rem and is determined by summing the individual doses of an exposed population. Dividing the person-rem estimate by the number of people in the population indicates the average dose that a single individual could receive. The potential impacts from a small dose to a large number of people can be approximated by the use of population (that is, collective) dose estimates.

2.2.3.2 Lag Storage Addition 1

LSA 1, used to store LLW, is a flexible fabric structure about 122 meters (400 feet) northeast of the Process Building, next to and just east of the LSB (see Figure 2-7). It was constructed in 1987 to protect radioactive waste containers from wind and precipitation. LSA 1 has a pre-engineered steel frame over which vinyl fabric has been pulled and attached to create a weather-protective enclosure (Marschke 2001).

LSA 1 has a footprint that measures 15 meters by 58 meters (50 feet by 191 feet), and it is 7 meters (23 feet) high at the top center. The usable inside area is about 11 meters wide by 44 meters long by 4 meters high (37 feet by 144 feet by 14 feet). In 1999, a 4-meter (14-foot)-wide concrete corridor was added to the full length of the west side of the addition. The floor on the east side remains compacted gravel. The listed waste storage operating capacity is 1,287 cubic meters (45,454 cubic feet), and there are currently 235 cubic meters (8,282 cubic feet) of available storage space (Marschke 2001).

2.2.3.3 Lag Storage Additions 3 and 4

LSA 3 and LSA 4 are interim status, LLW and mixed LLW storage facilities under RCRA. They are twin, adjacent structures located about 152 meters (500 feet) northeast of the Process Building, just east of LSA 1 (see Figure 2-7). Originally built in 1991 and upgraded in 1996 (LSA 3) and 1999 (LSA 4), these structures provide enclosed storage space for waste containers. LSA 4 also contains the Container Sorting and Packaging Facility, which was added in fiscal year (FY) 1995. A shipping depot has been added to the south side of the structure (Marschke 2001).

LSA 3 and LSA 4 have sheet metal sides and roof over an internal structural steel frame anchored to a concrete floor. Each building’s footprint is 27 meters by 89 meters (88 feet by 292 feet). Each building’s outside walls rise vertically 8 meters (26 feet). Each concrete floor has a 15-centimeter (6-inch) curb around its perimeter. LSA 3 has an operating capacity of 4,701 cubic meters (166,018 cubic feet), while LSA 4 has an operating capacity of 4,162 cubic meters (146,980 cubic feet). There are currently 789 cubic meters (27,880 cubic feet) of available storage space in LSA 3, and 1,084 cubic meters (38,278 cubic feet) of available space in LSA 4 (Marschke 2001).

Located just inside and to the west of LSA 4's south wall roll-up door is the Container Sorting and Packaging Facility. This engineered area was added in 1995 for contact sorting of previously packaged wastes. The walls and ceiling of this 12-meter by 9-meter (40-foot by 28-foot) area are made of prefabricated, modular, 22-gauge stainless-steel panels. On the south side of LSA 4, there is a 21-meter by 28-meter (69-foot by 91-foot) enclosed shipping depot to enhance WVDP's ability to ship wastes off the site for disposal (Marschke 2001).

2.2.3.4 Chemical Process Cell Waste Storage Area

The Chemical Process Cell Waste Storage Area is an area about 274 meters (900 feet) northwest of the Process Building (see Figure 2-7). Originally built in 1985 as a storage area primarily for radioactively contaminated equipment packaged and removed from the Chemical Process Cell, it now consists of a Quonset-hut-style enclosure and its structural base frame. This enclosure, which is 61 meters (201 feet) long by 20 meters (65 feet) wide by 8 meters (25 feet) high at the center, is built from four major, independent sections. The two center sections are each about 19 meters (62 feet) by 20 meters (65 feet), and the two end sections are each about 12 meters (39 feet) by 20 meters (65 feet). Each section is bolted to the same foundation base and banded to the adjacent section. The structural base frame is an I-beam attached to a top plate of sixty anchors 2 meters (7 feet) long and 25 centimeters (10 inches) in diameter that are screwed into the ground (Marschke 2001).

Twenty-two painted carbon steel waste storage boxes of various sizes are stored within the Chemical Process Cell Waste Storage Area. These boxes, which contain contaminated vessels, equipment, and piping removed from the Chemical Process Cell, are stored in the center area of the enclosure. This center area is surrounded by 45 hexagonal concrete shielding modules. Each cavity contains twenty-one 55-gallon drums arranged as three 7-packs. These modules provide line-of-sight shielding around the 22 waste boxes they encircle. Four carbon steel waste boxes are placed on the east end of the enclosure, outside of the array of shielding modules but inside the metal enclosure for additional shielding. Nine carbon steel waste boxes are stored on the west end of the enclosure for the same purpose. These 13 waste boxes contain low dose LLW equipment and material removed from clean-up activities carried out in the Product Purification Cell and Extraction Cell 3 (Marschke 2001).

2.2.4 Radwaste Treatment System Drum Cell

The Radwaste Treatment System Drum Cell is a metal structure located about 610 meters (2,000 feet) south of the Process Building (see Figures 1-2 and 2-8). Established in 1986, it provides shielded, passive storage for about 19,900 square drums of cement-solidified LLW, each with a capacity of 269 liters (71 gallons), produced during Cement Solidification System operations. The Radwaste Treatment System Drum Cell includes a gravel basepad, a vertical perimeter internal shield wall, an enclosing temporary weather structure, shielded load-in/load-out area, operator office, and miscellaneous mechanical handling and operations support equipment (Marschke 2001).

The basepad is a layered construction of crushed stone on a geotextile mat placed on top of a 1- to 2-meter (3- to 6-foot) layer of compacted native clay. Moisture and settlement detecting instruments are installed in the clay layer. The Temporary Weather Structure is a pre-engineered metal-sided building that is 114 meters long (375 feet) by 18 meters (60 feet) wide by 8 meters (26 feet) high at the outside eave and totally encloses the 0.5-meter (20-inch) thick by 4.6-meter (15 feet) high concrete shield wall and stored drums. A 1,800-kilogram (2-ton) overhead crane that spans the building is used to move concrete drums into and out of their horizontal storage locations with a 900-kilogram (1-ton) drum grabber. A 696-centimeter (274-inch)-wide crane maintenance area occupies the full 18 meters (60 feet) on the west end. The floor of this area is gravel (Marschke 2001).

2.2.5 Remote Handled Waste Facility

Wastes that have high surface radiation exposure rates or contamination levels require processing using remote-handling technologies to ensure worker safety. These are referred to as remote-handled wastes and will be processed in the RHWF.

The RHWF is currently under construction, but when complete it will be a free-standing facility, approximately 58 meters (191 feet) long by 28 meters (93 feet) wide by 14 meters (45 feet) high. It is located in the northwest corner of the WVDP site, northwest of the STS Support Building and southwest of the Chemical Process Waste Storage Area (see Figure 2-7). Primary activities in the RHWF will include confinement of contamination while handling, assaying, segregating, cutting, and packaging remote-handled waste streams. The RHWF will cut relatively large components into pieces small enough to fit into standard types of waste containers.

The RHWF contains a receiving area, buffer cell, work cell, contact maintenance area, sample packaging and screening room, radiation protection operations area, waste packaging and survey area, operating aisle, office area, and the loadout/truck bay. The shield walls, doors, and windows of the RHWF will be constructed so that the radiation exposure rate in normally occupied areas will be no greater than 0.1 milliroentgen per hour.

The wastes to be processed in the RHWF are a variety of sizes, shapes, and materials, including structural steel, concrete, grout, resins, plastics, filters, wood, and water. These materials will be in the form of tanks, pumps, piping, fabricated steel structures, light fixtures, conduits, jumpers, reinforced concrete sections, personal protective equipment, general rubble, and debris. Waste from the RHWF will be packaged into 55-gallon drums and B-25 boxes.

2.3 NO ACTION ALTERNATIVE – CONTINUATION OF ONGOING WASTE MANAGEMENT ACTIVITIES

A no action alternative must be considered in all EISs to provide a benchmark against which the impacts of the proposed action and alternatives can be compared. For this project, the No Action Alternative means continuing with the waste management activities that were previously described in the *Final Environmental Impact Statement, Long-Term Management of Liquid High-level Radioactive Wastes Stored at the Western New York Nuclear Service Center, West Valley* (DOE 1982) and its two supplemental analyses, environmental assessments, and categorical exclusion documentation. These activities would include continued surveillance, maintenance, monitoring, and other operational support of facilities to meet requirements for safety and hazard management. A limited amount of Class A LLW would be shipped to NTS or to a commercial disposal site such as Envirocare (although shipments to Hanford are also included for the purposes of analysis). TRU waste would continue to be stored on the site. HLW would continue to be stored in the Process Building on the site. Management of the waste storage tanks would also continue as under current operations which provide for active ventilation of the tanks and the annulus surrounding the tanks that is filtered through multiple banks of high-efficiency particulate air (HEPA) filters before being discharged.

Under the No Action Alternative, waste management activities would include:

- Using the full capacity of the lag storage facilities (LSB and LSAs 1, 3, and 4). Currently, these facilities are at about 80 percent of their capacity.

- Processing waste from the Chemical Process Cell Waste Storage Area through the RHWF (see Figure 2-7) that is currently under construction, with the processed LLW being stored in one of the other onsite storage facilities. The RHWF will be used for segregating, size-reducing, repackaging, and otherwise preparing remote-handled radioactive wastes for transportation and disposal.

- Continuing onsite storage of all wastes, with the exception of 4,100 cubic meters (145,000 cubic feet) of Class A LLW wastes that would be shipped off the site.

- Ventilating the waste storage tanks and their surrounding vaults to manage moisture levels as a corrosion prevention measure.

Shipments under the No Action Alternative would be limited to 4,100 cubic meters (145,000 cubic feet) of Class A LLW addressed under previous NEPA documentation, until more extensive shipping can be assessed under the other alternatives in this EIS. Class A LLW is currently being shipped to Envirocare and NTS; however, for the purposes of analysis, shipments of these wastes to Hanford have also been assessed under the No Action Alternative. Table 2-2 identifies the number of containers and shipments required to dispose of up to 4,100 cubic meters (145,000 cubic feet) of Class A LLW.

Table 2-2. Waste Shipped Under the No Action Alternative

Waste Type	Container Type	Waste Shipped (cubic feet)[a]	Number of Containers	Number of Shipments
Class A LLW	Boxes	97,649	1,206	87 (truck) 44 (rail)
	Drums	47,351	6,878	82 (truck) 41 (rail)
Total		**145,000**	**8,084**	**169 (truck) 85 (rail)**

a. To convert cubic feet to cubic meters, multiply by 0.028.

Class A LLW would be disposed of at Hanford, NTS, or a commercial disposal site such as Envirocare. Activities at those sites would include unloading trucks or railcars, inspecting the waste containers, and moving the waste to the disposal areas for shallow land burial. Waste handling and disposal activities at Envirocare are regulated by the NRC and the State of Utah under a Radioactive Material License (UT2300249). LLW handling and disposal activities at Hanford and NTS are described in the *Draft Hanford Site Solid (Radioactive and Hazardous) Waste Program Environmental Impact Statement* (DOE 2002b) and the *Final Environmental Impact Statement for the Nevada Test Site and Off-site Locations* (DOE 1996b), respectively.

2.4 ALTERNATIVE A – OFFSITE SHIPMENT OF HLW, LLW, MIXED LLW, AND TRU WASTE TO DISPOSAL, AND ONGOING MANAGEMENT OF WASTE STORAGE TANKS

Under Alternative A, DOE's Preferred Alternative, DOE would ship Class A, B and C LLW and mixed LLW to one of two DOE potential disposal sites (in Washington or Nevada) or to a commercial disposal site (in Utah), ship TRU waste to WIPP in New Mexico, and ship HLW to the proposed Yucca Mountain HLW repository. LLW and mixed LLW would be shipped over the next 10 years. TRU waste shipments to WIPP could occur within the next 10 years if the TRU waste is determined to meet all the requirements for disposal in this repository; however, if some or all of WVDP's TRU waste does not meet these requirements, the Department would need to explore other alternatives for disposal of this waste. HLW would continue to be stored on the site until 2025 or later, then shipped to the proposed Yucca Mountain Repository. Although this period would extend well beyond the 10 years required for all other proposed actions under this alternative, the impacts of transporting the HLW have been included in this EIS to fully inform the decisionmakers should an earlier opportunity to ship HLW present itself. The waste storage tanks would continue to be managed as described under the No Action Alternative.

Table 2-3 shows the number of containers that would be required and the number of offsite shipments that, by either truck or rail, would be needed to remove the waste under Alternative A. The waste volumes used in this EIS were based on waste volumes that are currently in storage and projections of additional wastes that could be generated from ongoing operations over the next 10 years. These volumes were then escalated by about 10 percent to account for the uncertainties in future waste projections, packaging efficiency, and the choice of shipping container. Using this process, CH-TRU waste was escalated to 1,130 cubic meters (40,000 cubic feet) (from 1,020 cubic meters [36,000 cubic feet]), and RH-TRU waste was escalated to 250 cubic meters (9,000 cubic feet) (from 230 cubic meters [8,000 cubic feet]). LLW was escalated to 14,000 cubic meters (500,000 cubic feet) (from 13,000 cubic meters [450,000 cubic feet]), with the exception of the LLW volumes stored in the Drum Cell, which were not escalated because actual container counts are known. This escalated volume includes 223 cubic meters (7,889 cubic feet) of mixed LLW.

LLW and mixed LLW would be disposed of at Hanford, NTS, or a commercial disposal site such as Envirocare. Activities at those sites would include unloading trucks or railcars, inspecting the waste containers, and moving the waste to the disposal areas for shallow land burial. Waste handling and disposal activities at Envirocare are regulated by the NRC and the State of Utah under a Radioactive Material License (UT2300249). LLW and mixed LLW handling and disposal activities at Hanford and NTS are described in the *Final Waste Management Programmatic Environmental Impact Statement for Managing, Treatment, Storage, and Disposal of Radioactive and Hazardous Waste* (DOE/EIS-0200) (DOE 1997a).

TRU waste would be disposed of at WIPP or DOE would explore other alternatives. TRU waste would arrive on tractor-trailer trucks or railcars. At WIPP, DOE would unload the waste, inspect the waste packages, prepare the packages to be moved underground, and then move them underground for disposal. Environmental and health impacts of TRU waste handling and disposal activities at WIPP are described in the WIPP Supplemental EIS II (DOE 1997b).

HLW would be disposed of at a geologic repository (assumed to be the Yucca Mountain Repository). Waste handling and disposal activities for HLW are described in the *Final Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada* (DOE 2002a).

2.5 ALTERNATIVE B – OFFSITE SHIPMENT OF LLW AND MIXED LLW TO DISPOSAL, SHIPMENT OF HLW AND TRU WASTE TO INTERIM DISPOSAL, AND ONGOING INTERIM STABILIZATION OF WASTE STORAGE TANKS

Under Alternative B, LLW and mixed LLW shipping would occur as characterized under Alternative A; however, TRU and HLW would be shipped to interim offsite storage. As would be the action under Alternative A, LLW and mixed LLW currently in storage would be prepared for disposal and shipped off the site to Hanford, NTS, or a commercial disposal site such as Envirocare. TRU waste would be shipped to Hanford, INEEL, ORNL, or SRS for interim storage, then to WIPP for disposal. TRU waste could also

Table 2-3. Waste Volumes, Containers, and Shipments Under Alternatives A and B

Waste Type	Totals			
	Volume (cubic feet)[a]	Containers	Alternative A Shipments	Alternative B Shipments
LLW				
Class A, boxes	351,586	4,341	311 (truck) 156 (rail)	311 (truck) 156 (rail)
Class A, drums	83,014	12,058	144 (truck) 72 (rail)	144 (truck) 72 (rail)
Class B, high-integrity containers	38,500	428	428 (truck) 107 (rail)	428 (truck) 107 (rail)
Class B, drums	194	29	1 (truck) 1 (rail)	1 (truck) 1 (rail)
Class C, high-integrity containers	12,618	141	141 (truck) 36 (rail)	141 (truck) 36 (rail)
Class C, 55-gallon drums	6,198	901	91 (truck) 23 (rail)	91 (truck) 23 (rail)
Class C, 71-gallon drums	193,405	20,377	850 (truck) 213 (rail)	850 (truck) 213 (rail)
Total LLW	685,515	38,275	1,966 (truck) 608 (rail)	1,966 (truck) 608 (rail)
TRU[b]				
Contact-handled	40,000	5,810	139 (truck) 139 (rail)	278 (truck)[d] 278 (rail)[d]
Remote-handled	9,000	1,308	131 (truck) 33 (rail)	262 (truck)[e] 66 (rail)[f]
Total TRU	49,000	7,118	270 (truck) 172 (rail)	540 (truck)[g] 344 (rail)[h]
HLW				
HLW canisters		300[i]	300 (truck) 60 (rail)	600 (truck)[j] 120 (rail)[k]
Mixed LLW[c]				
Mixed A, drums	7,889	1,146	14 truck) 7 (rail)	14 truck) 7 (rail)
Total Volume	742,404			
Total Containers		46,839		
Total Shipments			2,550 (truck) 847 (rail)	3,120 (truck)[l] 1,079 (rail)[m]

Source: Marschke 2001

a. To convert cubic feet to cubic meters, multiply by 0.028.
b. Defined by NRC and DOE as waste containing more than 100 nanocuries of alpha-emitting isotopes, with half-lives greater than 20 years, per gram of waste.
c. Generally at WVDP, mixed LLW is shipped off the site for treatment at a commercial facility and from there to a disposal site. Any mixed LLW shipped off the site for disposal must meet the disposal facilities' waste acceptance criteria.
d. 139 CH-TRU shipments from WVDP to interim storage, 139 CH-TRU shipments from interim storage to disposal.
e. 131 RH-TRU shipments from WVDP to interim storage, 131 RH-TRU shipments from interim storage to disposal.
f. 33 RH-TRU shipments from WVDP to interim storage, 33 RH-TRU shipments from interim storage to disposal.
g. 270 TRU shipments from WVDP to interim storage, 270 TRU shipments from interim storage to disposal.
h. 172 TRU shipments from WVDP to interim storage, 172 TRU shipments from interim storage to disposal.
i. Assumed to be 300 for purposes of analysis; actual number of canisters is 275.
j. 300 HLW shipments from WVDP to interim storage, 300 HLW shipments from interim storage to disposal.
k. 60 HLW shipments from WVDP to interim storage, 60 HLW shipments from interim storage to disposal.
l. Includes 270 TRU waste, and 300 HLW, truck shipments from interim storage to disposal. Alternative B would load the same number of truck shipments (2,550) at WVDP for shipment offsite as Alternative A.
m. Includes 172 TRU waste, and 60 HLW, rail shipments from interim storage to disposal. Alternative B would load the same number of rail shipments (847) at WVDP for shipment offsite as Alternative A.

be shipped to WIPP for interim storage prior to disposal there. TRU waste disposal at WIPP would be subject to the same regulatory requirements described under Alternative A. HLW would be shipped to SRS or the Hanford Site for interim storage, with subsequent shipment to a HLW repository (assumed to be the proposed Yucca Mountain Repository for the purposes of analysis in this EIS). The waste volumes, containers, and shipments, from WVDP, would not change under Alternative B from those proposed under Alternative A. However, the additional shipments of TRU wastes and HLW from interim storage locations result in a higher total number of shipments for Alternative B.

As an alternative to the ongoing ventilation of the waste storage tanks under the No Action Alternative and Alternative A, under Alternative B the waste storage tanks and their surrounding vaults would be partially filled with a retrievable, controlled low-strength material (grout) to provide for interim stabilization of the tanks.

For the purposes of analysis in this EIS, DOE assumed that Tanks 8D-1 and 8D-2 and the annulus surrounding each tank would be filled to a depth of approximately 1 meter (40 inches) with grout. Using a conservative pumping rate of 8 cubic meters (10 cubic yards) per hour, it would take approximately 60 hours to fill each tank/vault. The addition of grout to the tanks would not constitute an irreversible action. The grout material would be formulated to be sufficiently flexible to provide shielding and would be retrievable should DOE decide to remove the tanks in the future. The formulation of this low-strength grout material would need to be developed and would be the subject of additional regulatory reviews (such as RCRA) before the interim stabilization action could be implemented. The grout material would also be developed to provide sufficient structural stability and radionuclide retention should DOE decide to close the tanks in place.

LLW and mixed LLW would be disposed of at Hanford, NTS, or a commercial disposal site such as Envirocare. Activities at those sites would include unloading trucks or railcars, inspecting the waste containers, and moving the waste to the disposal areas for shallow land burial. Waste handling and disposal activities at Envirocare are regulated by the NRC and the State of Utah under a Radioactive Material License (UT2300249). LLW and mixed LLW handling and disposal activities at Hanford and NTS are described in the *Draft Hanford Site Solid (Radioactive and Hazardous) Waste Program Environmental Impact Statement* (DOE 2002b) and the *Final Environmental Impact Statement for the Nevada Test Site and Off-site Locations* (DOE 1996b), respectively.

TRU waste would be shipped to Hanford, INEEL, ORNL, or SRS for interim storage, and then to WIPP for disposal. TRU waste could also be shipped to WIPP for interim storage prior to disposal there.

At the interim storage sites, the TRU waste would be unloaded, inspected, and moved to storage areas. Additional storage facilities may be needed at these sites, depending on the available waste storage capacity at the time. Up to 0.2 hectare (0.5 acre) of land might be required for facilities sufficient to safely store the 49,000 cubic feet (1,372 cubic meters) of TRU waste currently stored at WVDP. Siting, constructing, and operating TRU waste storage facilities at INEEL, ORNL, and SRS were addressed in the *Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement* (DOE 1995a), the *Final Environmental Impact Statement for Treating Transuranic (TRU)/Alpha Low Level Waste at the Oak Ridge National Laboratory, Oak Ridge, Tennessee* (DOE 2000), and the *Savannah River Site Waste Management Final Environmental Impact Statement* (DOE 1995b), respectively.

Further, the WM PEIS (DOE 1997a) analyzed the potential environmental impacts associated with the possible treatment of TRU waste from offsite generators at WIPP prior to disposal. For that reason, DOE included WIPP as a potential location for interim storage of TRU waste generated at WVDP. A decision to ship TRU waste to WIPP for interim storage prior to disposal at WIPP would require siting, construction, and operation of TRU waste storage capacity at WIPP and additional NEPA review. Shipment of TRU waste from the interim storage facilities to WIPP and activities at that site are described in the WIPP Supplemental EIS II (DOE 1997b).

Interim storage of WVDP HLW at Hanford or SRS for interim storage prior to disposal at a geologic repository was analyzed as part of the Regionalized Alternatives in the WM PEIS (DOE 1997a).

2.6 ALTERNATIVES CONSIDERED BUT NOT ANALYZED

In contrast with alternatives assessed in the *Draft Environmental Impact Statement for Completion of the West Valley Demonstration Project and Closure or Long-Term Management of Facilities at the Western New York Nuclear Service Center* (DOE 1996a), this EIS does not consider any new onsite disposal of wastes or indefinite storage of currently stored wastes or wastes to be generated as a result of ongoing operations over the next 10 years. DOE has issued EISs and decisions that identify disposal sites other than the WVDP for each waste type considered in this EIS (see Section 1.7). These sites, identified in Alternatives A and B, already have existing or planned disposal capacity; they are safe, secure, and suitable from an environmental standpoint. In light of the current and anticipated availability of disposal facilities at these other sites, DOE presently does not consider an alternative to construct and maintain waste storage facilities at the WVDP to be practical or reasonable over time, because of continuing costs of construction of new facilities and maintenance of existing facilities.

For purposes of analysis in this EIS, DOE selected potential sites for interim storage and disposal of TRU waste and HLW based on the WM PEIS (DOE 1997a), the WIPP Supplemental EIS II (DOE 1997b), and the associated RODs for these documents. For TRU waste, DOE analyzed Hanford, INEEL, LANL, ORR, Mound, NTS, SRS, and WIPP as potential storage sites for TRU waste. The TRU waste ROD stated that:

> "In the future, the Department may decide to ship TRU wastes from sites where it may be impractical to prepare them for disposal to sites where DOE has or will have the necessary capability. The sites that could receive such shipments of TRU waste are [INEEL, ORR, SRS, and Hanford]. However, any future decisions regarding transfer of TRU wastes would be subject to appropriate review under [NEPA] and to agreements DOE has entered into." 63 Fed. Reg. 3629 (1998).

Based on this analysis and documentation, DOE considered Hanford, INEEL, ORNL, and SRS as the potential interim storage locations under Alternative B for TRU waste generated at WVDP. Further, the WM PEIS (DOE 1997a) analyzed the potential environmental impacts associated with the possible treatment of TRU waste from offsite generators at WIPP prior to disposal. For that reason, DOE included WIPP as a potential location for interim storage of TRU waste generated at WVDP. A decision to ship TRU waste to WIPP for interim storage prior to disposal at WIPP would require additional NEPA review.

With respect to HLW, the HLW ROD stated that DOE had decided to store immobilized HLW at Hanford, INEEL, SRS, and WVDP (64 Fed. Reg. 46661 (1999)). In this WVDP Waste Management EIS, DOE examined the environmental impacts associated with shipping HLW generated at WVDP to Hanford or SRS for interim storage prior to disposal at a geologic repository. Although the impacts of shipping HLW to INEEL are not specifically analyzed in this EIS, DOE expects those impacts would be less than shipping to Hanford because the distance to INEEL is shorter and impacts are directly related to the miles traveled.

2.7 COMPARISON OF ALTERNATIVES

This section summarizes and compares the potential environmental impacts of the No Action Alternative, Alternative A, and Alternative B. As described previously, the waste management actions proposed under all alternatives would be conducted in existing facilities (or, in the case of waste transportation, on existing road and rail lines) by the existing work force over the next 10 years, and would not involve new construction or building demolition. As a result, the scope of potential impacts that could result from the proposed actions is limited. Specifically, because there would be no mechanism for new land disturbance under any alternative, there would be no potential to directly or indirectly impact current land use; biotic communities; cultural, historical, or archaeological resources; visual resources; threatened or endangered species or their critical habitats; wetlands; or floodplains. Additionally, because the work force requirements would be the same under all alternatives (for example, there would be no increases or decreases from current employment levels), there would be no potential for socioeconomic impacts. For these reasons, the potential for impacts under all the alternatives are limited to human health and transportation impacts. Interim storage of TRU waste and HLW at other DOE sites could require the siting, construction, and operation of additional storage capacity for the volume of WVDP wastes to be stored, depending on the storage capacity at those sites at the time. It is recognized that additional review of interim storage impacts at the receiving sites could be necessary prior to implementation of these actions assessed in this EIS under Alternative B.

Table 2-4 summarizes the normal operational impacts under the three proposed alternatives over the 10-year period analyzed in this EIS. Because the proposed waste management actions would involve only the storage, packaging, loading, and shipment of wastes and management options for the waste storage tanks, the proposed activities would result in a statistically insignificant contribution to the historically low impacts of ongoing WVDP operations. As a result, the human health impacts to involved and noninvolved workers and the public are dominated by ongoing WVDP site operations; therefore, there is little discernible difference in the impacts that could occur among the three alternatives.
Table 2-5 summarizes the onsite accident consequences that could result from the proposed actions under each alternative. Chapter 4 provides a detailed assessment of impacts. Under all alternatives, the risk of a latent cancer fatality from the proposed actions that would occur onsite would be less than 1, whether under normal operating conditions or accidents. Offsite transportation of wastes would also result in less than 1 fatality from normal operations and accidents under all alternatives. Under maximum reasonably foreseeable transportation accidents, 1 latent cancer fatality could result under the No Action Alternative and about 3 latent cancer fatalities could result under Alternative A or B.

The WM PEIS (DOE 1997a), the WIPP Supplemental EIS II (DOE 1997b), and the *Final Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada* (DOE 2002a) analyzed potential environmental impacts associated with management (treatment, storage, or disposal) of LLW, mixed LLW, TRU waste, and HLW, including waste generated and stored at WVDP. Using data extrapolated from these earlier NEPA documents, Table 2-6 shows the potential estimated human health impacts of managing WVDP waste at Envirocare, Hanford, INEEL, NTS, ORNL, SRS, WIPP, and a geologic repository at Yucca Mountain. Appendix C, Section C.10, explains how these impacts were derived.

Table 2-4. Summary of Normal Operational Impacts at West Valley

Impact Area	Unit of Measure	No Action Alternative	Alternative A - Preferred	Alternative B
Human Health Impacts[a]				
Public Impacts from Waste Management Activities				
MEI	LCF	0	0	2.4×10^{-13}
Population	LCF	0	0	6.0×10^{-9}
Public Impacts from Continued Operations				
MEI	LCF	3.1×10^{-7}	3.1×10^{-7}	3.1×10^{-7}
Population	LCF	1.3×10^{-3}	1.3×10^{-3}	1.3×10^{-3}
Public Impacts from Combined Actions				
MEI	LCF	3.1×10^{-7}	3.1×10^{-7}	3.1×10^{-7}
Population	LCF	1.3×10^{-3}	1.3×10^{-3}	1.3×10^{-3}
Worker Impacts				
Involved worker MEI	LCF	2.7×10^{-4}	1.0×10^{-3}	1.0×10^{-3}
Noninvolved worker MEI	LCF	2.4×10^{-4}	2.4×10^{-4}	2.4×10^{-4}
Involved worker population	LCF	1.6×10^{-3}	0.024	0.025
Noninvolved worker population	LCF	0.060	0.060	0.060
Total worker population	LCF	0.062	0.084	0.085
Transportation				
Total	Shipments	169 (truck) 85 (rail)	2,550 (truck) 847 (rail)	3,120 (truck)[b] 1,079 (rail)[c]
Impacts (from all causes – radiological and nonradiological; routine and accident conditions)				
Truck	Fatalities	0.030 – 0.037	0.69 – 0.72	0.76 – 0.87
Rail	Fatalities	0.036 – 0.043	0.52 – 0.59	0.62 – 0.78
Maximum reasonably foreseeable accidents				
Truck	LCF (Probability)	1 (5×10^{-7})	3 (6×10^{-7})	3 (1×10^{-6})
Rail	LCF (Probability)	1 (2×10^{-6})	3 (1×10^{-7})	3 (5×10^{-7})
Geology and Soils		No impact	No impact	No impact
Water Quality and Resources				
Groundwater		No impact	No impact	No impact
Surface water		No impact	No impact	No impact
Wetlands		No impact	No impact	No impact
Floodplains		No impact	No impact	No impact
Noise and Aesthetics		No impact	No impact	No impact
Ecological Resources				
Threatened and endangered species		No impact	No impact	No impact
Other plants and animals		No impact	No impact	No impact
Land Use		No impact	No impact	No impact
Socioeconomics		No impact	No impact	No impact
Environmental Justice		No impact	No impact	No impact
Cultural Resources		No impact	No impact	No impact

a. MEI = maximally exposed individual; LCF = latent cancer fatality (number of fatalities expected or probability).

b. Includes 270 TRU waste, and 300 HLW, truck shipments from interim storage to disposal. Alternative B would make the same number of truck shipments (2,550) from WVDP as Alternative A.

c. Includes 172 TRU waste, and 60 HLW, rail shipments from interim storage to disposal. Alternative B would make the same number of rail shipments (847) from WVDP as Alternative A.

Table 2-5. Summary of Accident Impacts[a] at West Valley
(also see Chapter 4)

Accident	No Action Alternative[b]			Alternative A[b]			Alternative B[b]		
	Worker	MEI	Population[c]	Worker	MEI	Population[c]	Worker	MEI	Population[c]
	(LCF)			(LCF)			(LCF)		
Drum puncture[d]	2.8×10^{-9}	1.2×10^{-9}	3.8×10^{-6}	4.8×10^{-8}	2.0×10^{-8}	6.0×10^{-5}	4.8×10^{-8}	2.0×10^{-8}	6.0×10^{-5}
Pallet drop[d]	1.7×10^{-8}	7.0×10^{-9}	2.2×10^{-5}	2.8×10^{-7}	1.2×10^{-7}	3.7×10^{-4}	2.8×10^{-7}	1.2×10^{-7}	3.7×10^{-4}
Box puncture[d]	3.4×10^{-8}	1.5×10^{-8}	4.5×10^{-5}	4.8×10^{-7}	2.0×10^{-7}	6.0×10^{-4}	4.8×10^{-7}	2.0×10^{-7}	6.0×10^{-4}
Drum cell drop	NA[g]	NA	NA	1.9×10^{-8}	8.0×10^{-9}	2.5×10^{-5}	1.9×10^{-8}	8.0×10^{-9}	2.5×10^{-5}
HIC[e] drop	NA	NA	NA	6.0×10^{-7}	2.6×10^{-7}	8.0×10^{-4}	6.0×10^{-7}	2.6×10^{-7}	8.0×10^{-4}
CH-TRU drum puncture	NA	NA	NA	1.5×10^{-5}	6.5×10^{-6}	0.021	1.5×10^{-5}	6.5×10^{-6}	0.021
RHWF[f] fire	NA	NA	NA	5.2×10^{-5}	2.2×10^{-5}	0.070	5.2×10^{-5}	2.2×10^{-5}	0.070
Collapse of Tank 8D-2 (wet)[d]	9.6×10^{-7}	4.1×10^{-7}	1.3×10^{-3}	9.6×10^{-7}	4.1×10^{-7}	1.3×10^{-3}	Eliminated[h]	Eliminated[h]	Eliminated[h]
Collapse of Tank 8D-2 (dry)[d]	1.6×10^{-6}	6.5×10^{-7}	2.1×10^{-3}	1.6×10^{-6}	6.5×10^{-7}	2.1×10^{-3}	Eliminated[h]	Eliminated[h]	Eliminated[h]
Collapse of Tank 8D-2 (grouted)[d]	NA	NA	NA	NA	NA	NA	9.6×10^{-7}	4.1×10^{-7}	1.3×10^{-3}
Tank 8D-2 containment system failure[d]	NA	NA	NA	NA	NA	NA	6.0×10^{-6}	2.5×10^{-6}	7.5×10^{-3}

a. Based on atmospheric conditions (stability class and wind speed) that are not exceeded 50 percent of the time.
b. MEI = maximally exposed individual; LCF = latent cancer fatality (probability).
c. Collective dose to the 1.5 million people living within 80 kilometers (50 miles) of the WVDP site.
d. Ground-level release.
e. HIC = High integrity container.
f. RHWF = Remote Handled Waste Facility.
g. NA = Not Applicable. Accident scenario could not occur under specified alternative.
h. Under Alternative B, grouting the HLW tanks would eliminate this accident scenario.

Table 2-6. Summary of Offsite Human Health Impacts

Site	No Action Alternative			Alternative A			Alternative B		
Envirocare[a]	Disposal of Class A LLW[b]			Disposal of LLW[c] and mixed LLW[d]			Disposal of LLW[c] and mixed LLW[d]		
	Worker	MEI	Population	Worker	MEI	Population	Worker	MEI	Population
	(LCF)			(LCF)			(LCF)		
	5.4×10^{-3}	6.9×10^{-6}	NA[e]	3.6×10^{-2}	5.1×10^{-5}	NA	3.6×10^{-2}	5.1×10^{-5}	NA
Hanford Site	Disposal of Class A LLW[b]			Disposal of LLW[c] and mixed LLW[d]			Disposal of LLW[c] and mixed LLW[d]		
	Worker	MEI	Population	Worker	MEI	Population	Worker	MEI	Population
	(LCF)			(LCF)			(LCF)		
	5.4×10^{-3}	6.9×10^{-6}	NA	3.6×10^{-2}	5.1×10^{-5}	NA	3.6×10^{-2}	5.1×10^{-5}	NA
							Interim Storage of TRU waste[f]		
							Worker	MEI	Population
							(LCF)		
							1.3×10^{-3}	3.4×10^{-8}	1.7×10^{-3}
							Interim Storage of HLW[g]		
							Worker	MEI	Population
							(LCF)		
							3.6×10^{-2}	NA	NA
INEEL	No activities			No activities			Interim Storage of TRU waste[f]		
							Worker	MEI	Population
							(LCF)		
							2.5×10^{-3}	5.1×10^{-8}	4.1×10^{-4}
NTS	Disposal of Class A LLW[b]			Disposal of LLW[c] and mixed LLW[d]			Disposal of LLW[c] and mixed LLW[d]		
	Worker	MEI	Population	Worker	MEI	Population	Worker	MEI	Population
	(LCF)			(LCF)			(LCF)		
	4.8×10^{-3}	3.0×10^{-16}	NA	3.2×10^{-2}	2.1×10^{-15}	NA	3.2×10^{-2}	2.1×10^{-15}	NA
ORNL	No activities			No activities			Interim Storage of TRU waste[f]		
							Worker	MEI	Population
							(LCF)		
							9.0×10^{-4}	1.4×10^{-8}	4.6×10^{-4}

Table 2-6. Summary of Offsite Human Health Impacts (cont)

Site	No Action Alternative	Alternative A			Alternative B		
SRS	No activities	No activities			**Interim Storage of TRU waste[f]**		
					Worker	**MEI**	**Population**
					(LCF)		
					7.4×10^{-4}	2.1×10^{-10}	2.3×10^{-5}
					Interim Storage of HLW[g]		
					Worker	**MEI**	**Population**
					(LCF)		
					2.0×10^{-2}	NA	NA
WIPP	No activities	**Disposal of TRU waste[f]**			**Interim Storage of TRU waste[f]**		
		Worker	**MEI**	**Population**	**Worker**	**MEI**	**Population**
		(LCF)			**(LCF)**		
		1.0×10^{-2}	3.0×10^{-9}	3.0×10^{-6}	1.6×10^{-4}	6.9×10^{-7}	2.6×10^{-3}
					Disposal of TRU waste[f]		
					Worker	**MEI**	**Population**
					(LCF)		
					1.0×10^{-2}	3.0×10^{-9}	3.0×10^{-6}
Yucca Mountain Repository	No activities	**Disposal of HLW[g]**			**Disposal of HLW[g]**		
		Worker	**MEI**	**Population**	**Worker**	**MEI**	**Population**
		(LCF)			**(LCF)**		
		6.8×10^{-2}	3.1×10^{-7}	2.0×10^{-2}	6.8×10^{-2}	3.1×10^{-7}	2.0×10^{-2}

a. Impacts of disposal of Class A LLW and mixed LLW at Envirocare are assumed to be similar to impacts at Hanford.
b. The volume Class A LLW to be disposed of would be 145,000 cubic feet. To convert cubic feet to cubic meters, multiply by 0.028.
c. The volume of LLW to be disposed of would be 685,515 cubic feet. To convert cubic feet to cubic meters, multiply by 0.028.
d. The volume of mixed LLW to be disposed of would be 7,889 cubic feet. To convert cubic feet to cubic meters, multiply by 0.028.
e. NA = Not available.
f. The volume of TRU waste to be stored or disposed of would be 49,000 cubic feet. To convert cubic feet to cubic meters, multiply by 0.028.
g. g. The volume of HLW to be stored or disposed of is assumed to be 300 canisters for purposes of analysis; actual number of canisters is 275.

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